

FIG. 1

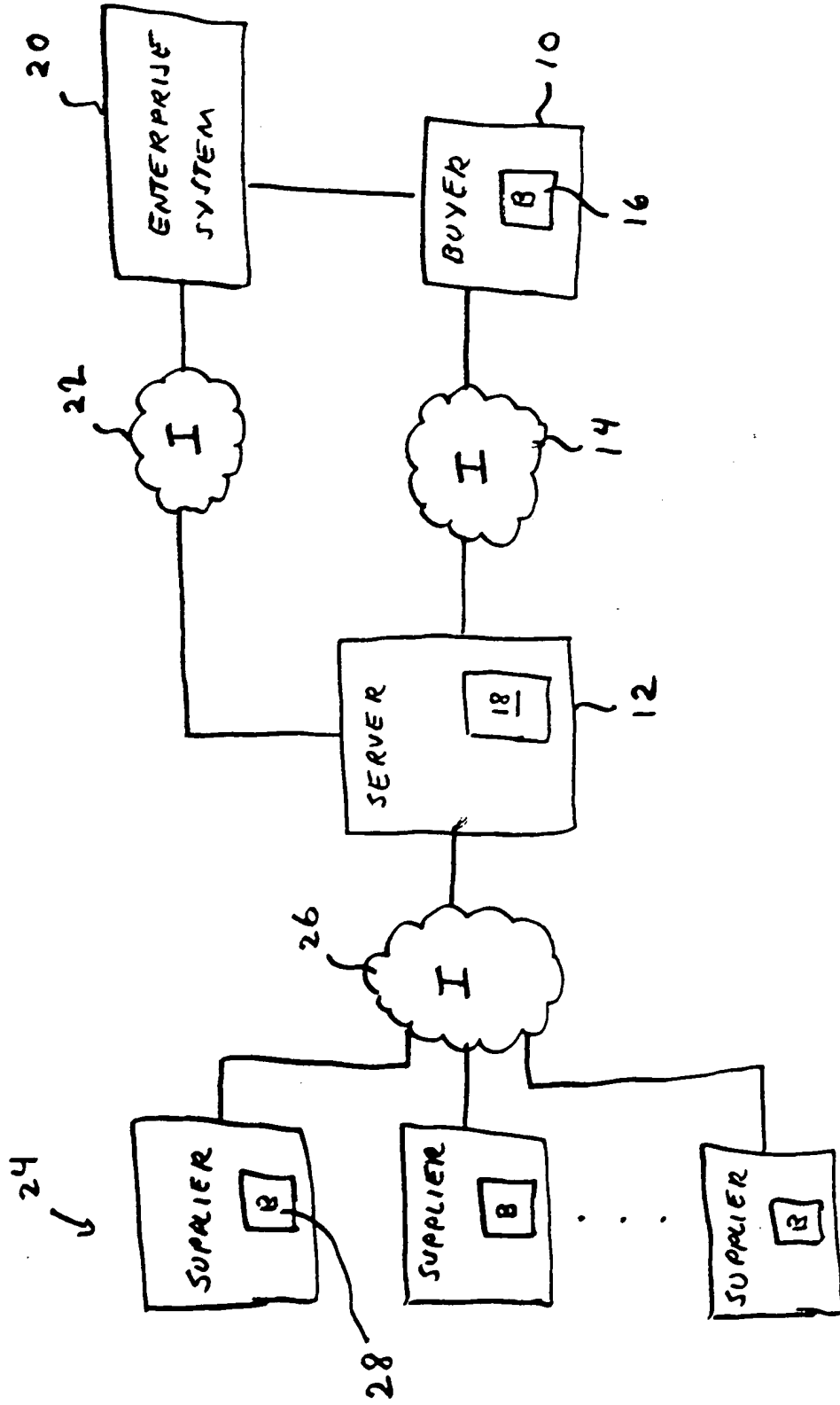


FIG. 1

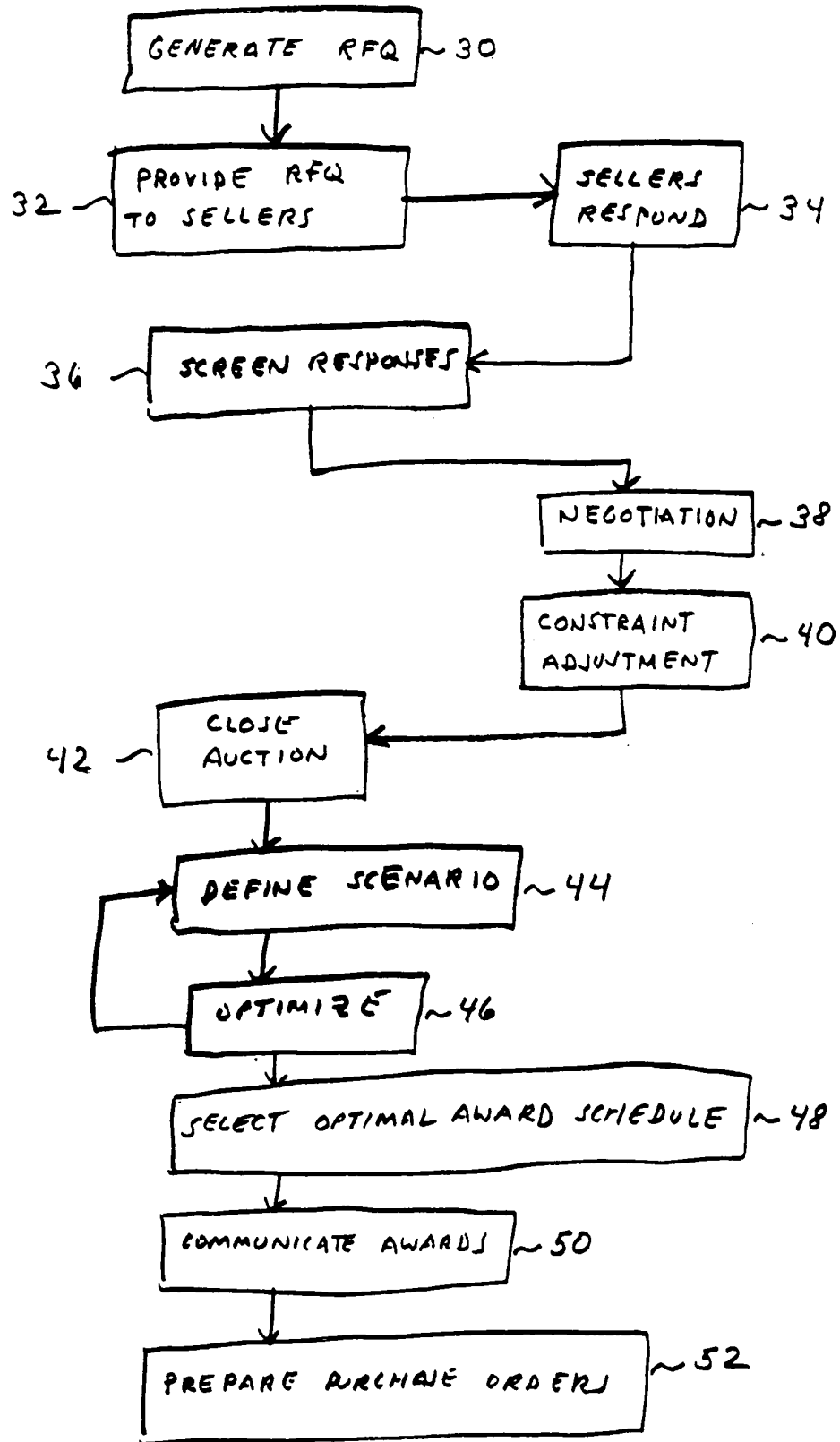


FIG 2

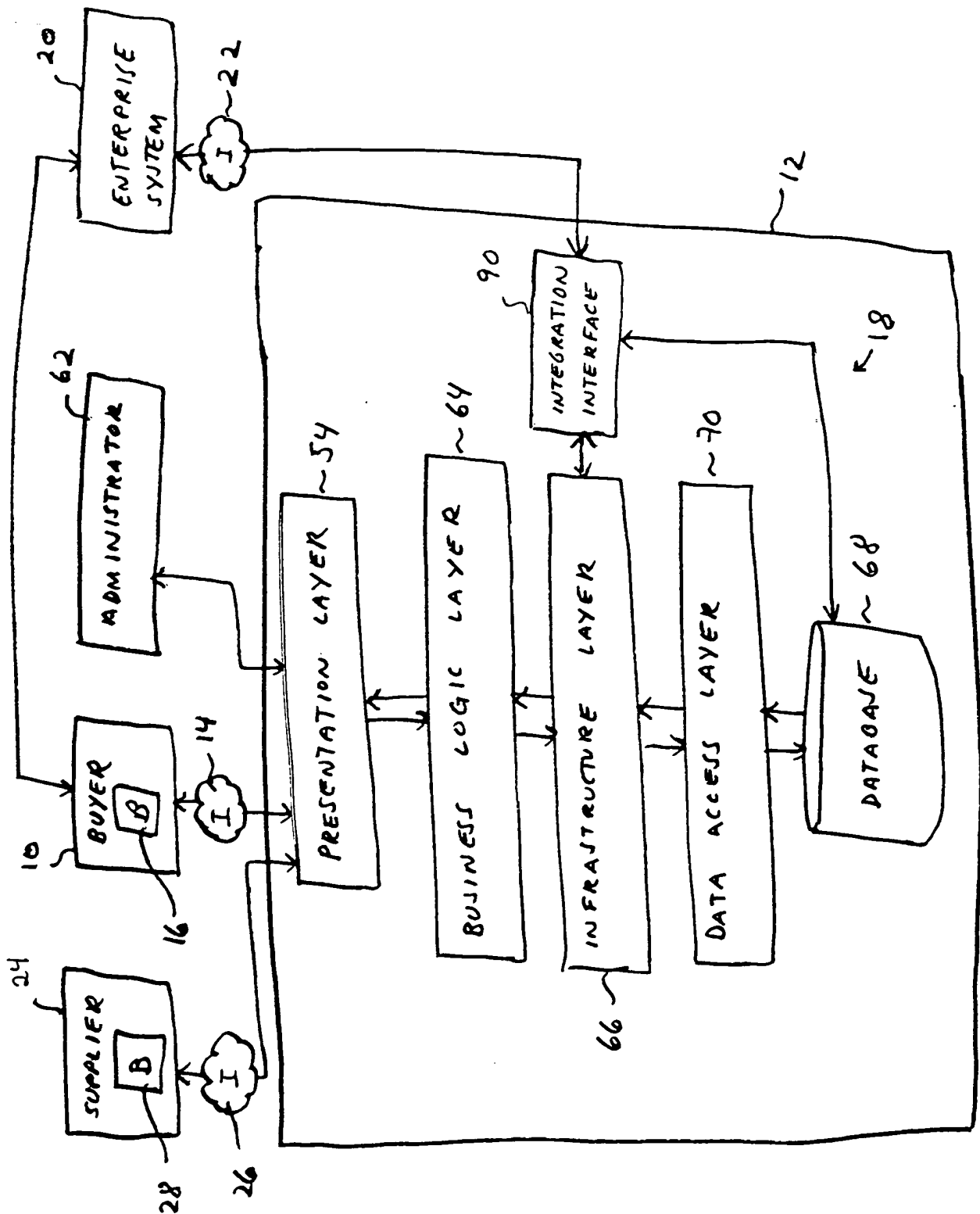


FIG. 3

FIG. 4 is a block diagram of a system architecture for a supply chain management system. The system includes a Supplier (10), Buyer (16), Administrator (20), and Enterprise System (22). These entities interact with a central system (12) which contains various engines and services. The central system is divided into several functional areas: Supplier Performance (64), Optimization Engine (76), Bidding Engine (74), Workflow Engine (72), Transaction Management Service (84), Integrated Messaging Service (86), Session Management Service (88), Authorization Service (82), Data Access (70), and Databases (68). The system also includes an XML Integ. (92), Java API (94), and RMS API (96) for external communication.

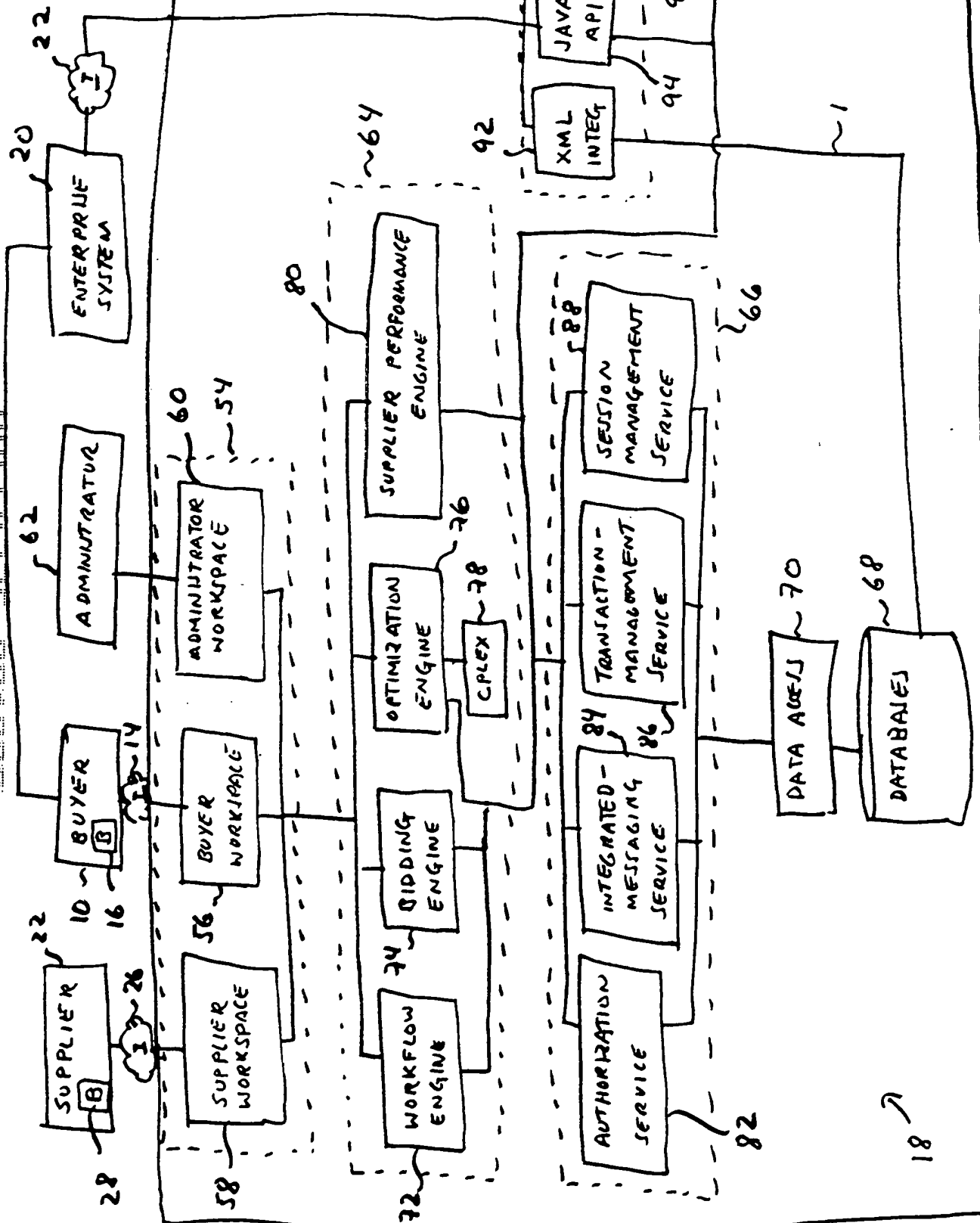


FIG 4

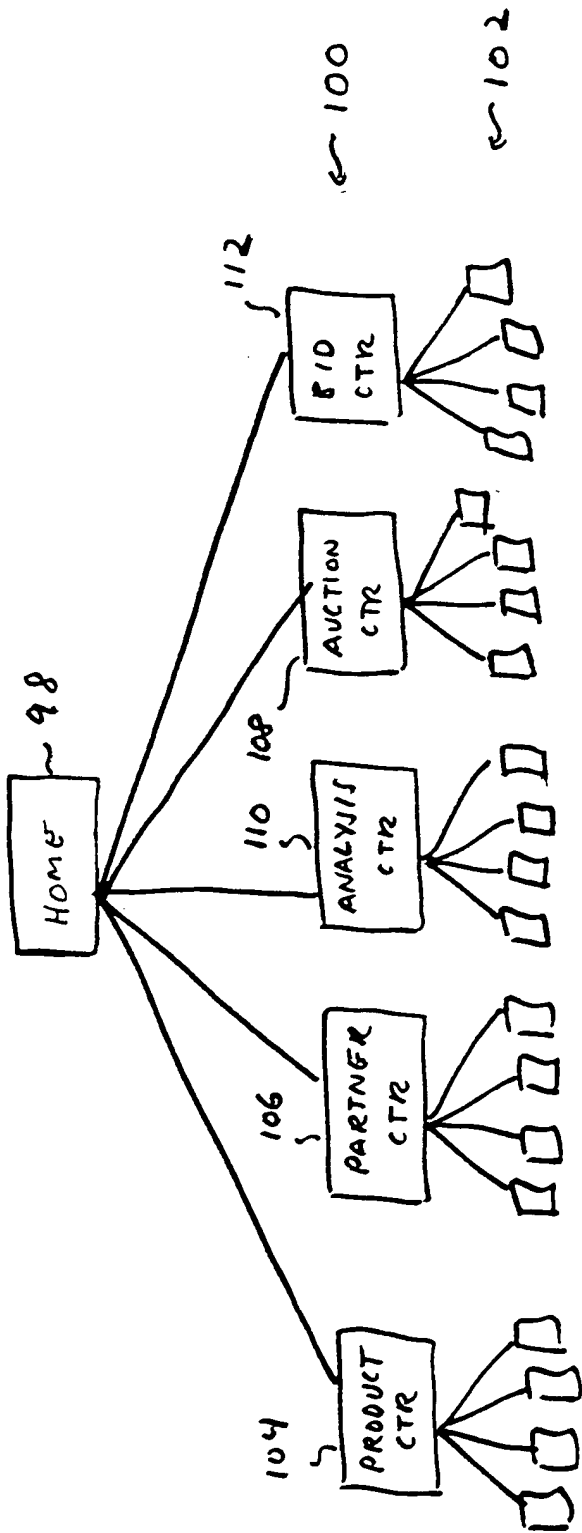


FIG. 5


Microsoft Internet Explorer

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ePASS

Buyer Home

Supplier Home

Registration Form

Please fill in the following form (* indicating required fields):

Organization Information:

Organization Type (*):	Seller
Organization Name (*):	ABC Co.
Code (*):	ABCCO
Description (*):	ABC Electronics
URL (*):	http://www.doit.com

Default Organization User:

Login Name (*):	ABCSeller
Name (*):	AI Tradings
Email Address (*):	ai@bigbuy.com
Fax Number:	
Phone Number (*):	123-123-1324
Select Password (*):	
Re-enter password (*):	

Proceed

Reset

Done

Local intranet

FIG. 6

OFFICE FURNITURE

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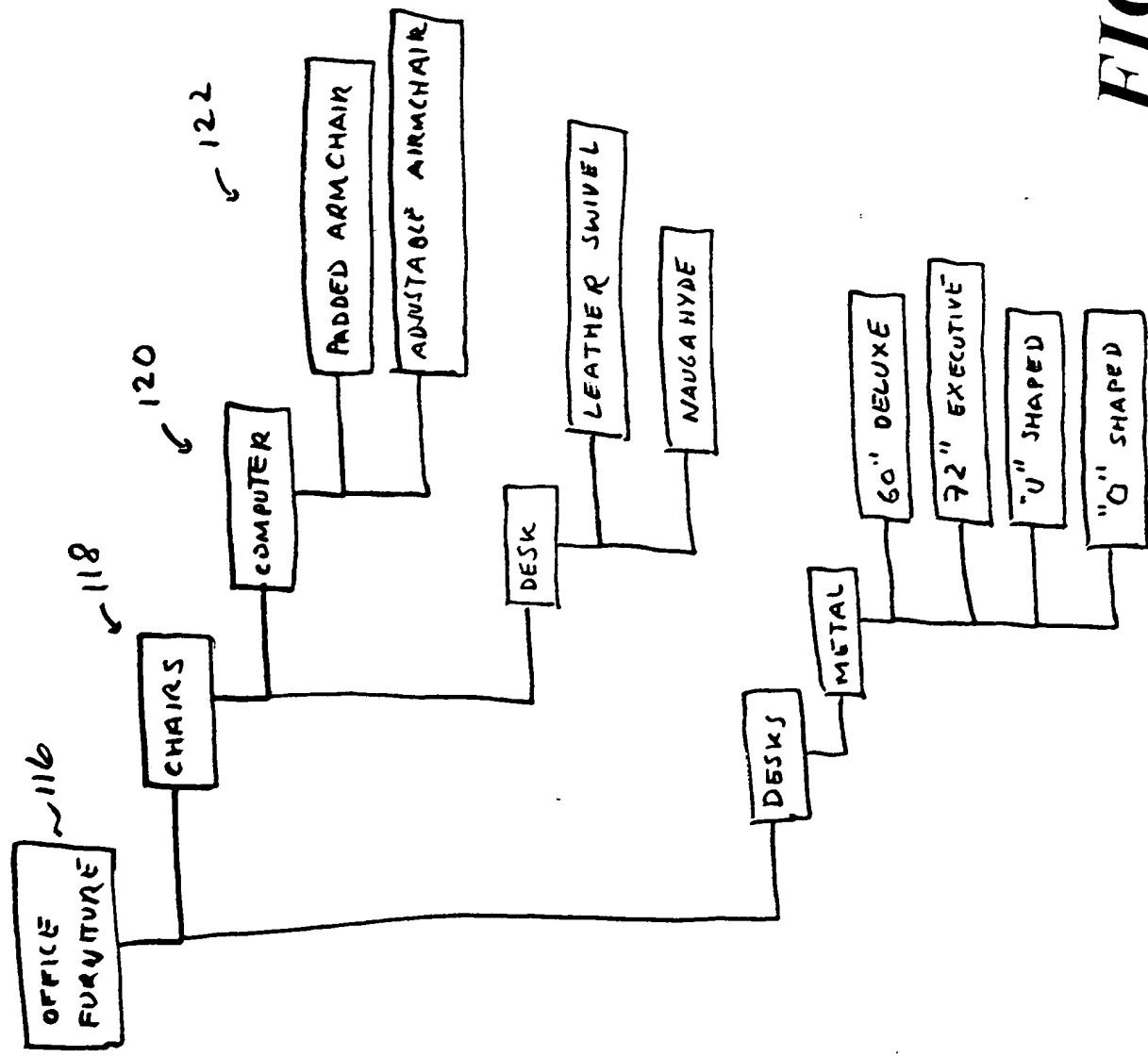


FIG 7

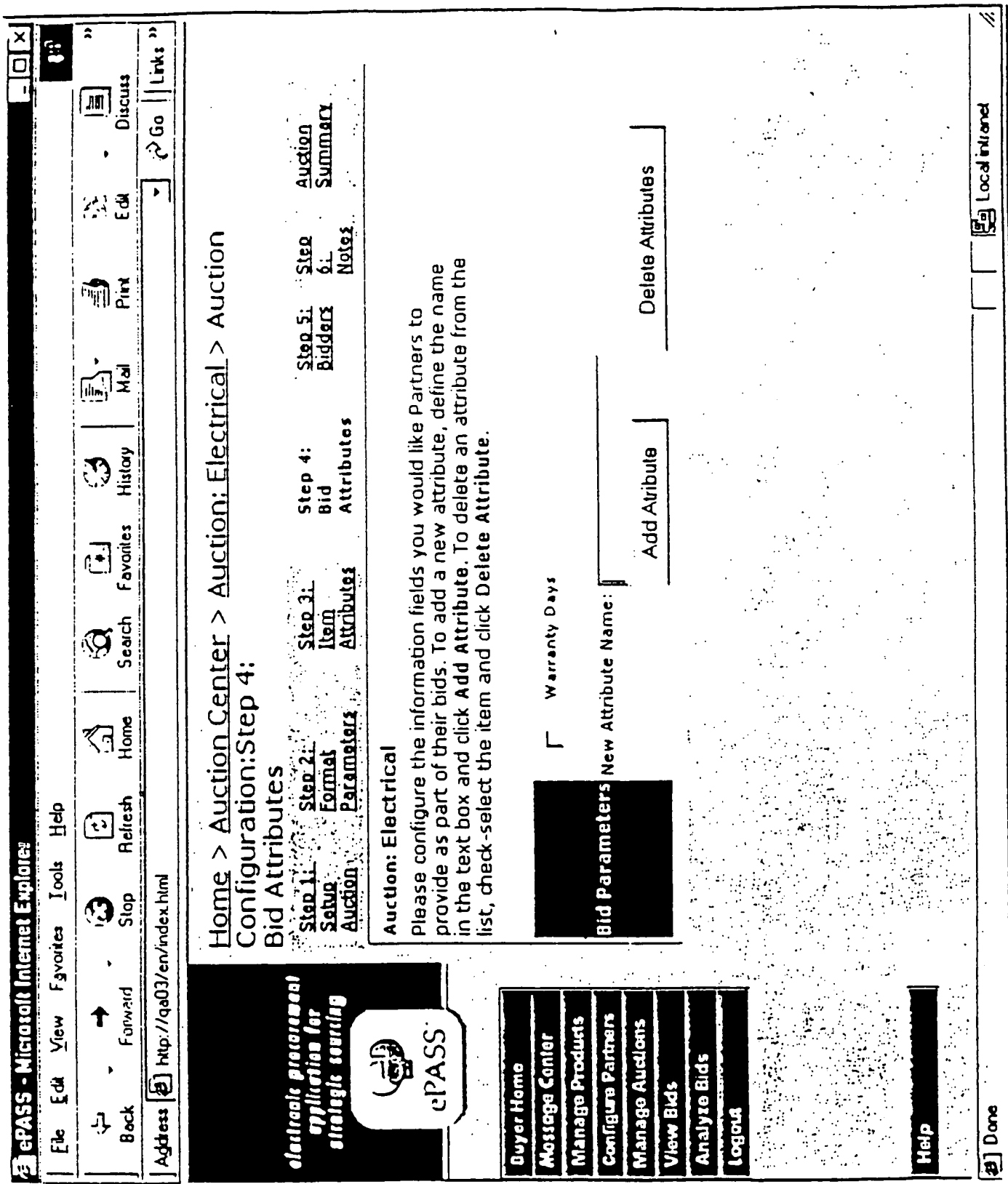


FIG. 8

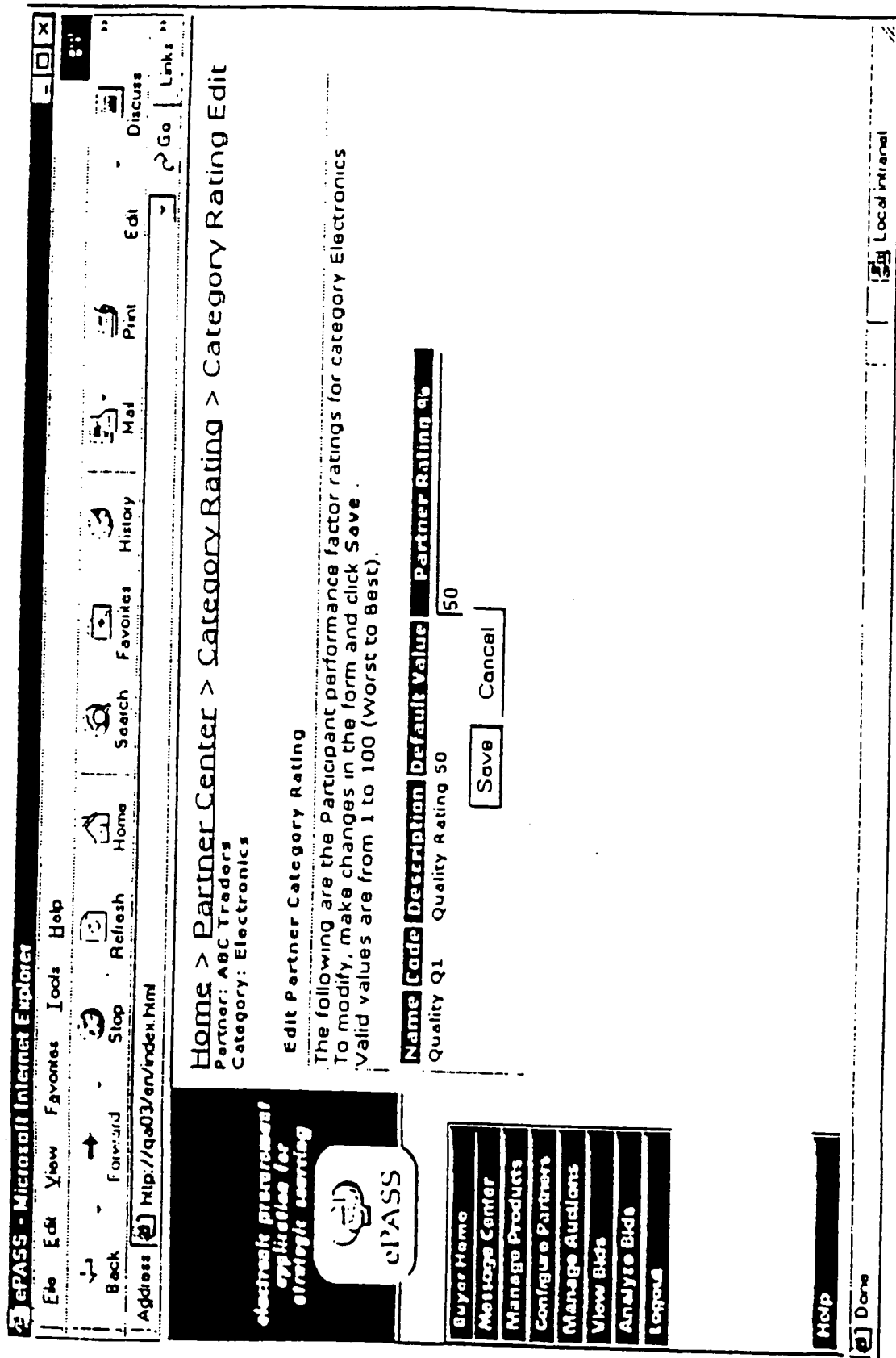


FIG. 9

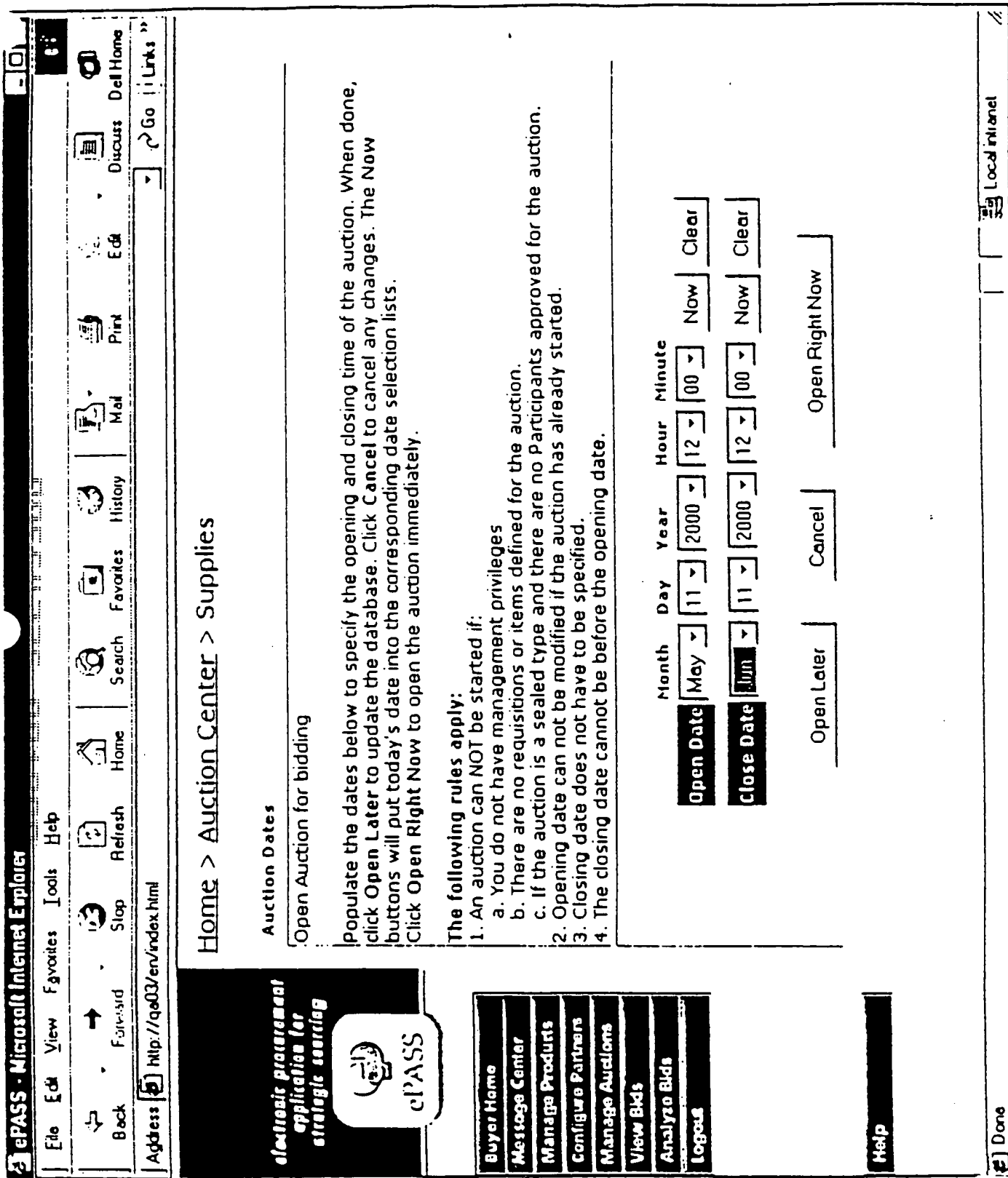


FIG. 11

Home > Bid Center

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CLASS

[View Open Auctions](#) [View Closed Auctions](#) [View Awarded Auctions](#) [View All Auctions](#)

The following Auctions are available. Click on a Auction's name to view the associated requisitions. View All Auctions

1-7 of 7

Name	Status	Type	Open	Close
<u>rfsshx1</u>	Open	Dutch	05/09/2000 10:29	06/09/2000 10:30
<u>Supplies</u>	Closed	Dutch	05/11/2000 12:01	05/11/2000 15:41
<u>Electrical</u>	Open	Sealed	05/11/2000 14:25	07/11/2000 14:30
<u>RFQsshx</u>	Open	Sealed	05/10/2000 16:18	06/10/2000 16:30
<u>Construction</u>	Open	Sealed	05/11/2000 14:31	07/11/2000 14:30
<u>Supplies2</u>	Open	Dutch	05/11/2000 15:48	07/11/2000 16:00
<u>Supplies3</u>	Open	Dutch	05/11/2000 16:14	

5th

1

Local interest

FIG. 12


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 ePASS

Supplier Home
Message Center
View Bids
Logout
Help

Home > Bid Center > Auction: Supplies2 > Requisition Items: Req 1

Auction Info

Auction Name	Supplies2
Auction Status	Open
Auction Type	Dutch
Show All Bidders	No
Start Date	05/11/2000 15:48
End Date	07/11/2000 16:00

View Requisition Items

The following line items are in the requisition.

1-3 of 3

Level	Item	Type	Category	Description	Desired Qty	Price	Action
	Pencils	Single Item	sshcatt	# 2 Pencils	1,000		Bid Messages
	Lined Paper	Single Item	sshcatt	8/11 Lined Paper White	100		Bid Messages
	Fax Paper	Single Item	sshcatt	Fax Paper 8/11	1,000		Bid Messages

Done Local Internet

FIG. 13

CPASS - National Indirect Expenses

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Address <http://qa03/ver/index.html> Go URL

Home > Bid Center > Auction1 Supplies2 > Requisition: Req_1 > Item: Pencils

Auction Info

Auction Name	Supplies2
Auction Status	Open
Auction Type	Dutch
Show All Bidders	No
Start Date	05/11/2000 15:48
End Date	07/11/2000 16:00

Item Details

Product Category	school Pencils
Name	PEN101
Description	# 2 Pencils
Minimum Desired Quantity	1,000
Maximum Desired Quantity	
Price Quote Unit	
Lot Size	
Required Delivery Date	

Reserved Price	
Historical Price	
Minimum Bid Quantity	0
Maximum Bid Quantity	

Lowest Bid

Bidder	7
Make Bid Quantity	1,000
Price Per Unit	\$0.05
Highest Bid Allowed	\$0.04

View Bids

The following are the current bids for this item.

Done

FIG. 15A

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[Address](#)
[http://qa03/en/index.html](#)

[Home](#) > [Bid Center](#) > [Auction: Electrical](#) > [Requisition: real](#) > [Item: 30 AMP Breakers](#)

Auction Info

Auction Name	Electrical
Auction Status	Open
Auction Type	Sealed
Close All Bidders	No
Start Date	05/11/2000 14:25
End Date	07/11/2000 14:30

Item Details

Product Category	Electrical
Name	30 AMP Breakers
Code	0K30A101
Description	30 AMP Circuit Breaker
Minimum Desired Quantity	40
Maximum Desired Quantity	
Price Quote Unit	
Lot Size	
Required Delivery Date	

View Bids

The following are the current bids for this item.
1-5 of 5

Bidder	Organization	Bid Type	Bundle Code	Min Bid Quantity	Max Bid Quantity	Price Per Unit	One Time Charge
HARRY SALES	ABC Co	Single Item Bid		40	100	\$5.00	\$0.00

[Home](#)
[Done](#)

FIG. 16A

FIG. 16B

FIG. 16B

Required Delivery Date

View Bids

The following are the current bids for this item.

0 of 0

Bidder Bid Type Min Bid Quantity Max Bid Quantity Price Per Unit One Time Charge

Enter Bid for the Item

Enter the Price per Unit and any other fields before clicking the Submit button:

Partner Product Code ABKR01

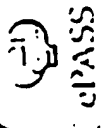
Comment

Warranty Days 60

	Minimum	Maximum	Price Per Unit	One Time Charge
Volume Bid Set 1	1	10	5.50	
Volume Bid Set 2	11	30	5.00	
Volume Bid Set 3	31	50	3.50	

Save Cancel

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Supplier Home Message Center View Bids Logout

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FIG. 17

2. Requisition: Construction
(Demonstrate Bundle Bid)

<u>Item</u>	<u>Qty</u>		<u>Bid 1</u>		<u>Bid 2</u>		<u>Bid 3</u>	
	<u>Desired</u>		<u>ABC Co.</u>		<u>BestDeal</u>		<u>Surfin</u>	
2x4x8	400		400	1.25	400	1.25	400	400
2x12x10	1000		1000	5.00	1000	4.50	1000	1000
PW 4x8x1/2	100		100	25.00	100	25.00	100	100
<u>Bundled @ \$7350</u>								

FIG. 18

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Supplier Home
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View Bids
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Help

Home > Bid Center > Auction: Construction > Requisition Items: REQ1

Auction Info

Auction Name	Construction
Auction Status	Open
Auction Type	Sealed
Show All Bidders	No
Start Date	05/11/2000 14:31
End Date	07/11/2000 14:30

View Requisition Items

The following line items are in the requisition.

1-3 of 3

Level	Selection	Item	Type	Category	Description	Desired Qty	Price	Action
	<input checked="" type="checkbox"/>	2x4x8	Single Item	sshcat1	Lumber 2 x 4 x 8 Ft	400		Bid
	<input checked="" type="checkbox"/>	2x12x10	Single Item	sshcat1	Lumber 2 x 12 x 10 FT	1,000		Bid
	<input checked="" type="checkbox"/>	PW 4x8x1/2	Single Item	sshcat1	Plywood 4 x 8 x 1/2 in	100		Bid

Select All | Unselect All | Switch All

Create Bundled Bid

Local intranet

FIG. 19

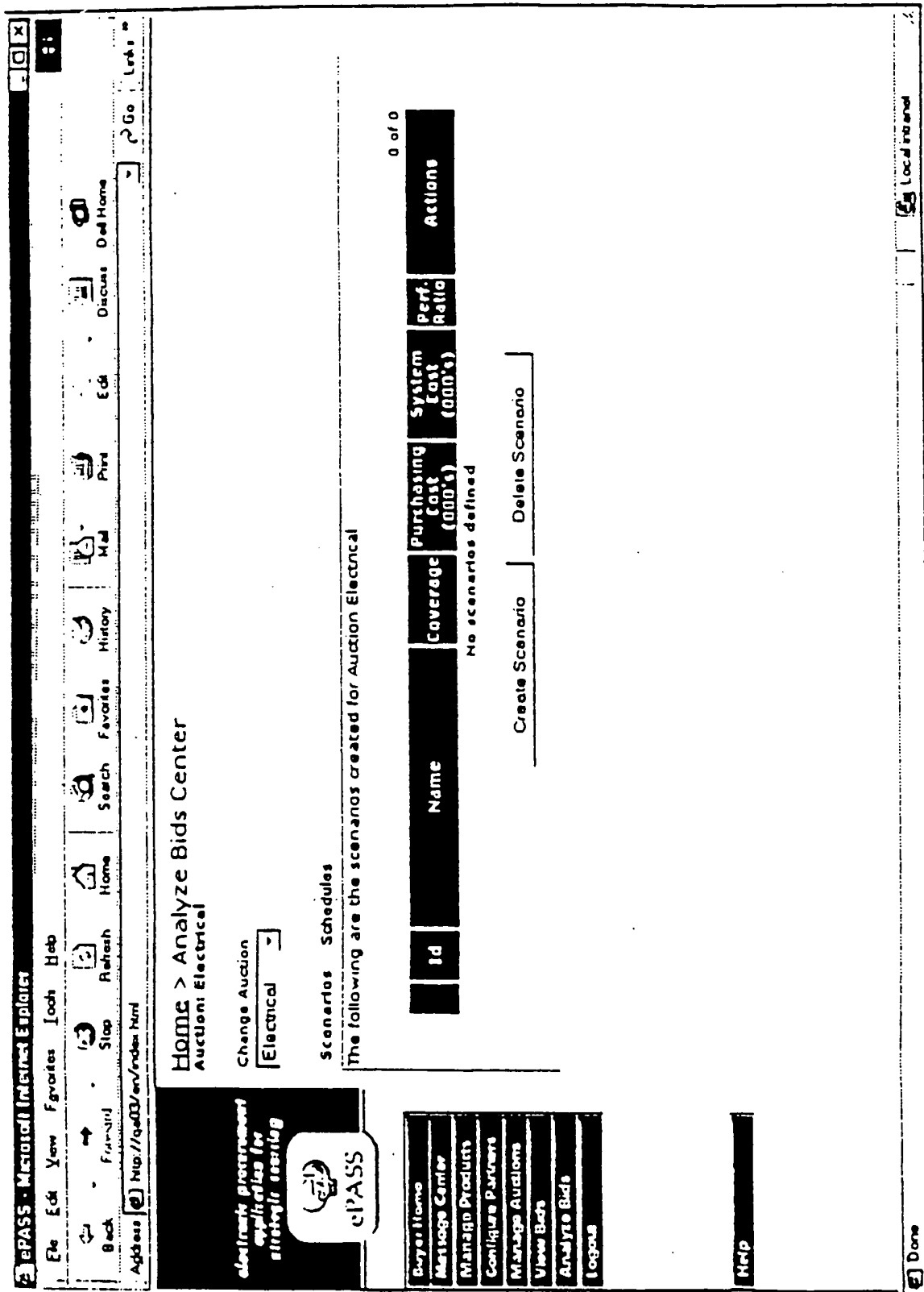


FIG. 21



FIG. 22

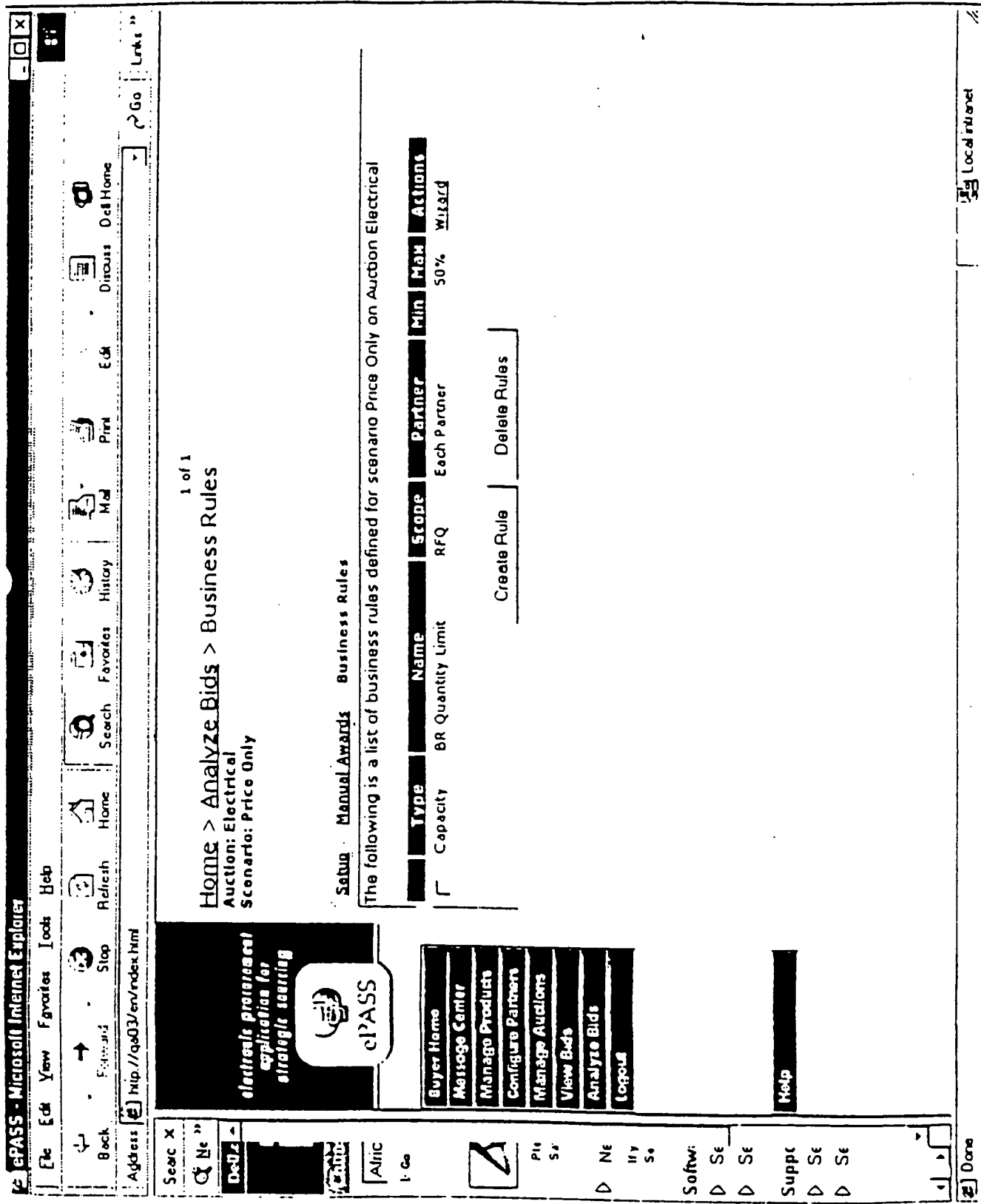


FIG. 23

ePASS - Microsoft Internet Explorer
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ePASS

Buyer Home
Message Center
Manage Products
Configure Partners
Manage Auctions
View Bids
Analyze Bids
Logout

Help

Business Rule Wizard (Step 2 of 4)

Name	BR Quantity Limit
Short Description	BRQTY
Long Description	Limit Vendors to no more than 50% of Bid
Ignore For Now?	No
Type	Capacity

Please specify the scope of the rule

<input checked="" type="radio"/> Auction	Apply across the entire Auction
<input type="radio"/> Requisition	Apply only to the specified requisition
<input type="radio"/> Category	Apply only to the specified category
<input type="radio"/> Item	Apply only to the specified item

Local intranet

FIG. 25



FIG. 26

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Go Links

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Manage Products
Configure Partners
Manage Auctions
View Bids
Analyse Bids
Logout
Help

Business Rule Wizard (Step 4 of 4)

Name	BR	Quantity Limit
Short Description	BRQTY	
Long Description	Limit Vendors to no more than 50% of Bid	
Ignore For Now?	No	
Type	Capacity	
Scope	RFQ	
Partner	Each Partner	

Please specify the minimum and/or maximum value that should be awarded

Select the units the minimum/maximum value are specified in	<input checked="" type="radio"/> Units <input type="radio"/> Dollars <input type="radio"/> Percentage	Specify this value if you require the Partner to be awarded a certain amount. You can leave this field blank if there is no required minimum. For percentage, specify 0.5 for 50%.
Minimum Amount to Award	<input type="text"/>	Specify this value if you want to limit the maximum amount awarded to the organization. You can leave this field blank if there is no maximum. For percentage, specify 0.5 for 50%.
Maximum Amount to Award	<input type="text"/> 0.5	

Back Finish Cancel

Done Local intranet

FIG. 27

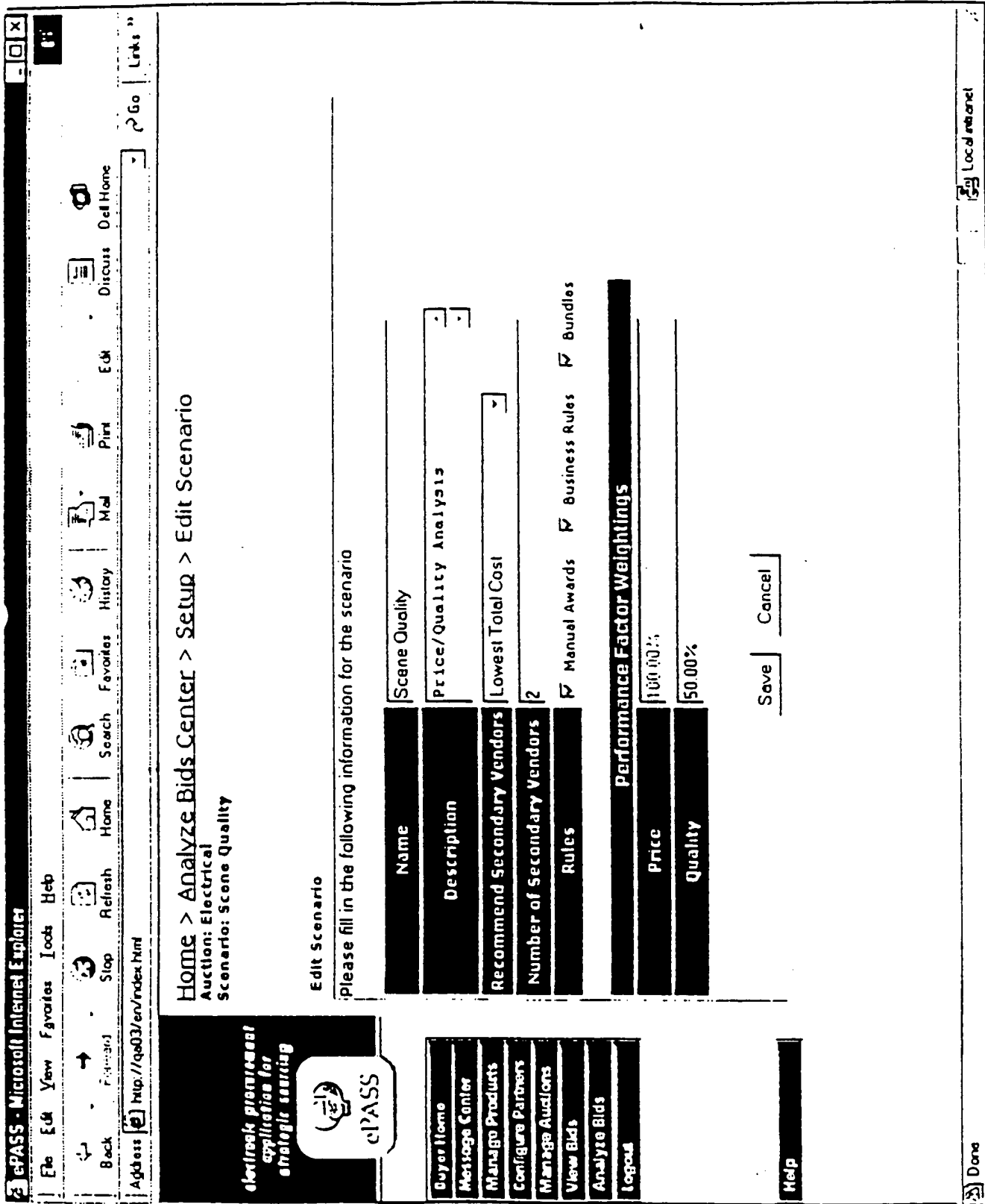
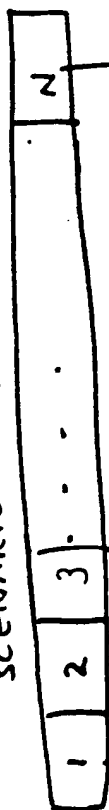


FIG. 28

FIG. 29

BUYER DEFINED
SCENARIO WEIGHTS



PERFORMANCE
ATTRIBUTE
FROM DATABASE

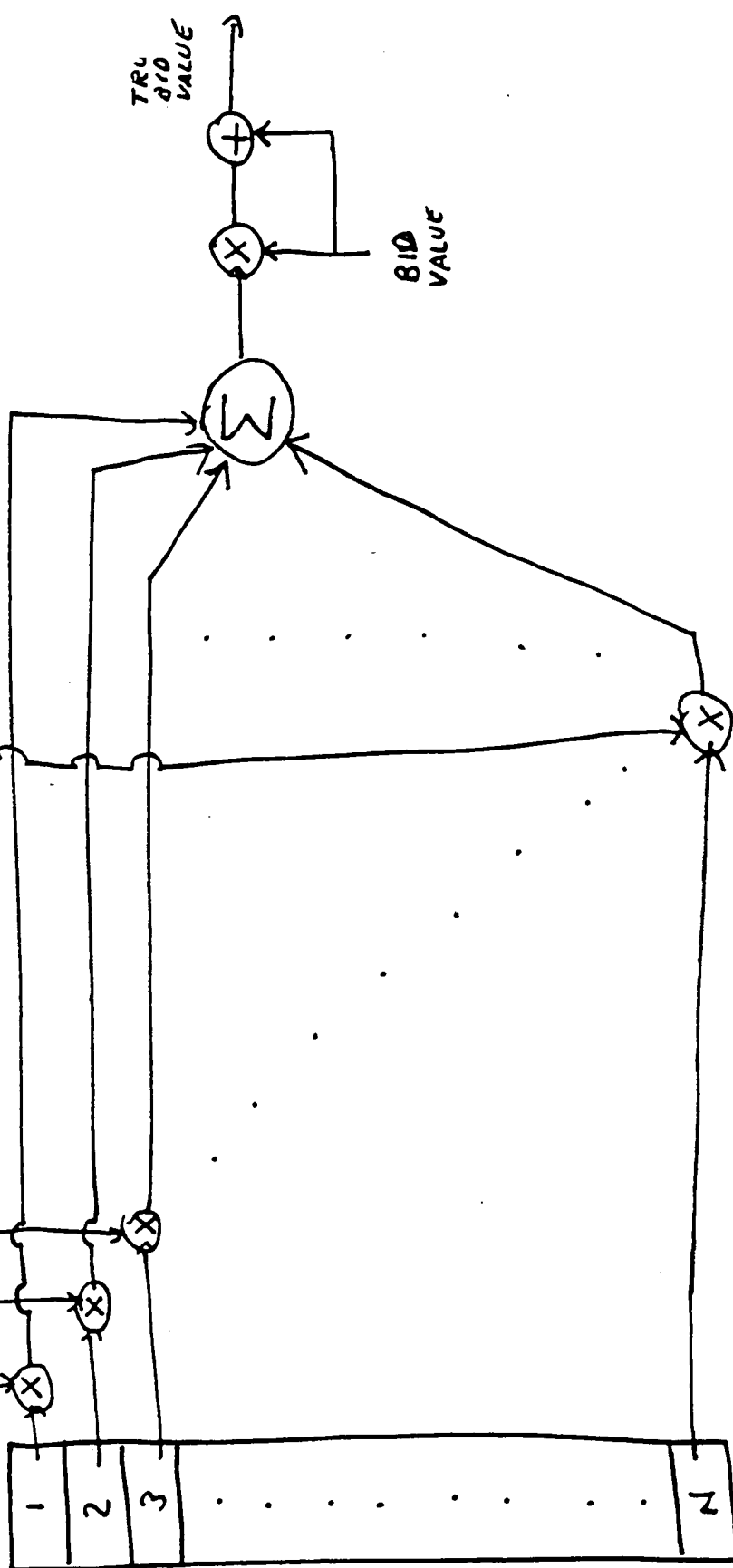


FIG. 29

$$\sum_{s \in S} \left\{ \sum_{b(s) \in B(s)} \left[f_{b(s)}^i \chi_{b(s)}^i + c_{b(s)}^i x_i^i \right] + \sum_{d(s) \in D(s)} f_{d(s)} \sum_{i \in d(s)} z_{d(s)}^i + c_{d(s)}^i z_{d(s)}^i \right\} +$$

$$\sum_{k \in K} \sum_{i \in I} w_{k,i} \left\{ \sum_{s \in S} \left(\frac{100 - c_j^s}{100} \right) \left[\sum_{b(s) \in B(s)} c_{b(s)}^i x_i^i + \sum_{d(s) \in D(s)} c_{d(s)}^i z_{d(s)}^i \right] \right\}$$

FIG 30

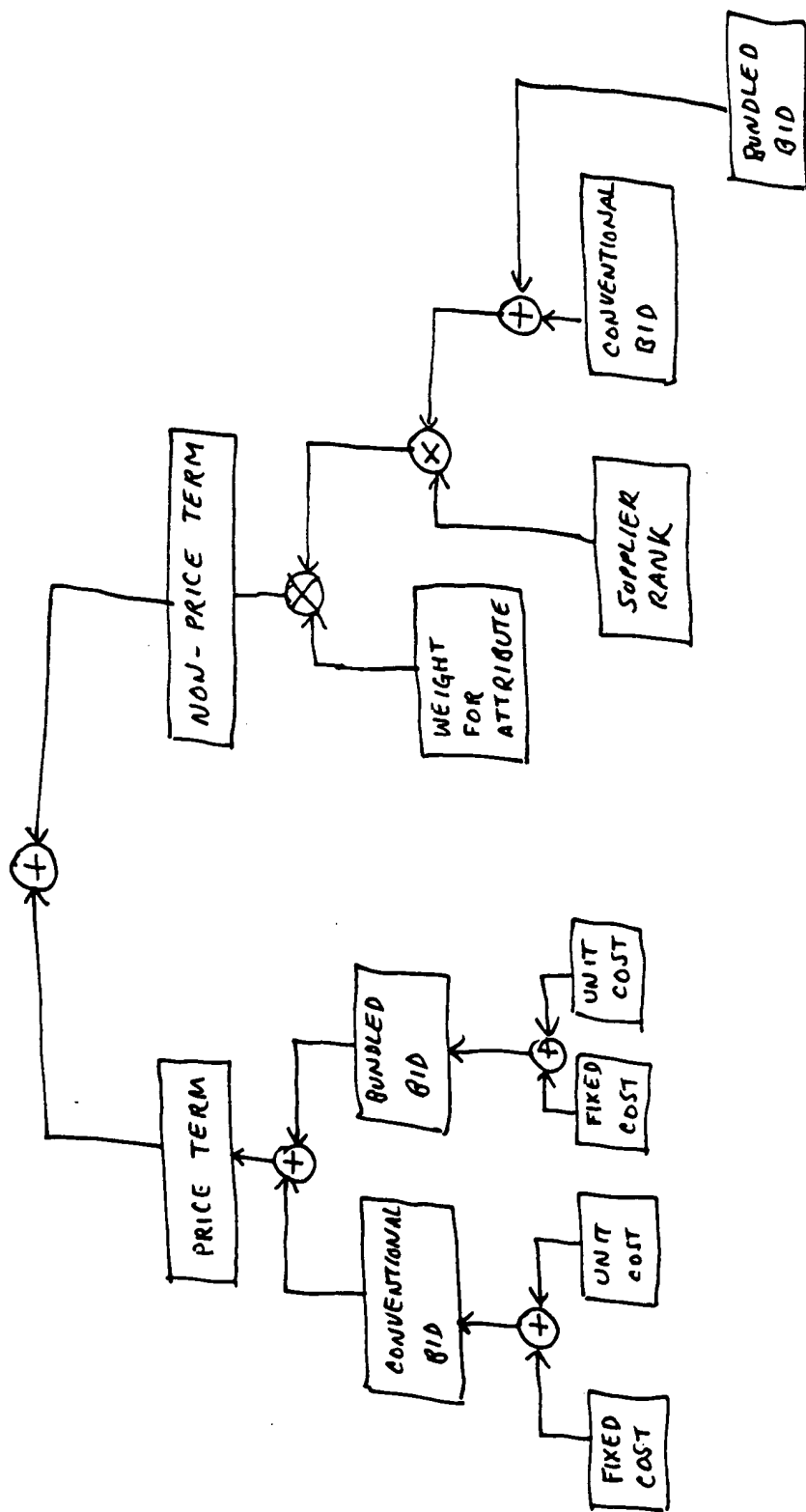


FIG. 31

$$\sum_{s \in S} \left(\sum_{b(s) \in B(s)} x_i^{b(s)} + \sum_{d(s) \in D(s)} z_i^{d(s)} \right) \leq Q_i^u \quad \forall i \in I \quad (1)$$

$$\sum_{s \in S} \left(\sum_{b(s) \in B(s)} x_i^{b(s)} + \sum_{d(s) \in D(s)} z_i^{d(s)} \right) \geq Q_i^l \quad \forall i \in I \quad (2)$$

$$\sum_{i \in g} \left(\sum_{b(s) \in B(s)} x_i^{b(s)} + \sum_{d(s) \in D(s)} z_i^{d(s)} \right) - Y_g^s M_g \leq 0 \quad \begin{matrix} \forall s \in S \\ \forall g \in G \end{matrix} \quad (3)$$

$$\sum_{i \in g} \left(\sum_{b(s) \in B(s)} x_i^{b(s)} + \sum_{d(s) \in D(s)} z_i^{d(s)} \right) - Y_g^s \geq 0 \quad \begin{matrix} \forall s \in S \\ \forall g \in G \end{matrix} \quad (4)$$

$$\sum_{s \in T} Y_g^s \leq \text{Max } N_g^t \quad \forall g \in G, \quad \forall t \in T \quad (5)$$

$$\sum_{s \in T} Y_g^s \geq \text{Min } N_g^t \quad \forall g \in G, \quad \forall t \in T \quad (6)$$

FIG. 32

$$\sum_{s \in T} \sum_{i \in g} \sum_{\tau \in g} \left(\sum_{b(s) \in B(s)} x_i^{\tau} + \sum_{(s)^p} z_i^{\tau} + \sum_{(s)^p \in D(s)^p} z_i^{\tau} \right) \leq \max Q_g^{\tau} \quad \forall g \in G, \quad \forall \tau \in T \quad (7)$$

$$\sum_{s \in T} \sum_{i \in g} \left(\sum_{b(s) \in B(s)} x_i^{\tau} + \sum_{(s)^p} z_i^{\tau} + \sum_{(s)^p \in D(s)^p} z_i^{\tau} \right) \geq \min Q_g^{\tau} \quad \forall g \in G, \quad \forall \tau \in T \quad (8)$$

$$\sum_{s \in T} \sum_{i \in g} \left(\sum_{b(s) \in B(s)} c_i^{b(s)} x_i + \sum_{(s)^p} c_i^{(s)^p} z_i^{(s)^p} + \sum_{(s)^p \in D(s)^p} c_i^{(s)^p} z_i^{(s)^p} \right) \leq \max V_g^{\tau} \quad \forall g \in G, \quad \forall \tau \in T \quad (9)$$

$$\sum_{s \in T} \sum_{i \in g} \left(\sum_{b(s) \in B(s)} c_i^{b(s)} x_i + \sum_{(s)^p} c_i^{(s)^p} z_i^{(s)^p} + \sum_{(s)^p \in D(s)^p} c_i^{(s)^p} z_i^{(s)^p} \right) \geq \min V_g^{\tau} \quad \forall g \in G, \quad \forall \tau \in T \quad (10)$$

FIG. 33

$$(11) \quad z_i^{d(s)} - u_i^{d(s)} z^{d(s)} \leq 0 \quad \forall i \in I, \forall s \in S, \forall b(s) \in B(s)$$

$$(12) \quad z_i^{d(s)} - l_i^{d(s)} z^{d(s)} \geq 0 \quad \forall i \in I, \forall s \in S, \forall b(s) \in B(s)$$

$$(13) \quad x_i^{b(s)} - x^{b(s)} u_i^{b(s)} \leq 0 \quad \forall s \in S, \forall b(s) \in B(s)$$

$$(14) \quad x_i^{b(s)} - x^{b(s)} l_i^{b(s)} \geq 0 \quad \forall s \in S, \forall b(s) \in B(s)$$

$$(15) \quad 0 \leq x_i^{b(s)} \leq u_i^{b(s)} \quad \forall s \in S, \forall b(s) \in B(s)$$

$$(16) \quad 0 \leq z_i^{d(s)} \quad \forall d(s) \in D(s)$$

$$(17) \quad x^{b(s)} = \begin{cases} 0 \\ 1 \end{cases} \quad \forall b(s) \in B(s)$$

$$(18) \quad y_g^s = \begin{cases} 0 \\ 1 \end{cases} \quad \forall g \in G, \forall s \in S$$

$$(19) \quad z_g^s = \begin{cases} 0 \\ 1 \end{cases} \quad \forall g \in G, \forall s \in S$$

FIG. 34

```

if  $p > p^*$  then
     $indicator = P$ 
else if  $O > O^*$  then
     $indicator = F$ 
else
     $indicator = C$ 

```

```

if  $O < O^*$  then
     $indicator = C$ 
else if  $p \geq p^*$ 
{
    if  $[O - p \geq O^*]$ 
         $indicator = F$ 
    else
         $indicator = P$ 
}
else
     $indicator = F$ 

```

FIG. 35

if ($O < O^*$)
 $indicator = C$;
else if ($p \geq ALL(p^i)$)
 {
 if ($(O - p) \geq ALL(O^i)$)
 $indicator = F$;
 else
 $indicator = P$;
 }
else
 $indicator = F$

FIG. 36

```

if ( $O < O^*$ )
     $indicator = C;$ 
else if ( $O > ALL(O^i)$ )
{
    if ( $p < p^*$ )
         $indicator = F;$ 
    else if ( $((O - p) \geq ALL(O^i))$ )
         $indicator = F;$ 
    else if ( $p > ALL(p^i)$ )
    {
        if ( $R > ALL(R^i)$ )
             $indicator = PF;$ 
        else
             $indicator = P;$ 
    }
    else
         $indicator = F;$ 
}
else
{
    if ( $p < p^*$ )
         $indicator = FC;$ 
    else if ( $R < R^*$ )
         $indicator = PC;$ 
    else
         $indicator = PFC;$ 
}

```

FIG. 37